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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/797,507  
Filing Date: March 10, 2004  
Appellant(s): BOOR, STEVEN E.

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Randall G Rueth  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 4/24/2009 appealing from the Office action mailed 7/23/2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

4879749	Levitt	11-1989
5602925	Killion	2-1997
4926459	Advani	5-1990
2002/0090102	Madaffari	7-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-3, 9-10, 12-17, 19-20 and 22 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Levitt et al. (4879749).

Claim 1 Levitt discloses a buffer circuit (Fig. 1-2, host controller, EEPROM, filter and amplifier) for use in a microphone assembly comprising:

A microphone housing (Fig. 2 and col. 3 line 39-41)

an input for receiving a signal (Fig. 2: microphone 57); an input buffer (Fig. 2; element 58 PROGR AGC) coupled to the input; an output (col. 5 line 7-11); a filter network coupled (Fig. 2: element 64) between the input buffer and the output; a selector (Fig. 1;host controller col. 3 line 36, Fig. 2; 84: EEPROM) comprising: a first input (col. 4 line 30-33 output host controller); a first output responsive to the first input (col. 2 line 49-51output EEPROM); and a tuning circuit (Fig. 2; 84 :EEPROM, tri-state switches, 85-86) coupled to the filter network for adjusting a characteristic of the filter network (col. 2 line 49-51), the tuning circuit responsive to the selector (col. 5 line 36-37),and the characteristic of the filter network is adjusted using the first input (col. 5 line 36-37)  
Levitt does not disclose wherein the buffer circuit is contained in the microphone housing (Fig. 2 and col. 3 line 39-41)

However Levitt discloses wherein elements of the buffer circuit are contained in the microphone housing (Fig. 2 and col. 3 line 39-41).

Therefore it would be obvious to one of ordinary skill in the art at the time the invention was made that the placement of selected elements within a housing would be determined by space considerations and design choice.

Claim 2 Levitt discloses, wherein the first input is on a separable tab (Fig. 1:124, EEPROM programming socket, col. 8 line 25-29).

Claim 3 analyzed with respect to claim 1, Levitt discloses, wherein the first input is on a separable tab (Fig. 1:124, EEPROM programming socket) and the characteristic of the filter network (col. 5 line 38-40) is adjusted (col. 8 line 25-29). Levitt does not clearly disclose wherein the first input is on a separable tab and the separable tab is removed from the buffer circuit after the characteristic of the filter network is adjusted. However it would be obvious to one ordinarily skilled in the art at the time the invention was made to place the host controller on a separable tab so that the buffer circuit can be removed from the programming device after programming and so user will not have to use the microphone assembly with an additional circuit or device attached.

Claim 9, Levitt discloses, wherein the first input is coupled to a biasing element (col. 5 line 34-37).

Claim 10, Levitt discloses, wherein the biasing element maintains a persistent state responsive to a programming signal applied to the first input (col. 5 line 34-37).

Claim 12, Levitt discloses wherein the biasing element is an EEPROM (col. 5 line 34-37).

Claim 13 analyzed with respect to claim 1, Levitt further discloses a resistive element coupled between the filter network and the tuning circuit (Fig. 2 element 86, tri-state switch).

Claim 14 analyzed with respect to claim 13 and claim 1, Levitt does not clearly disclose wherein a value of the resistive element is 500k ohms. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the value of the resistive element to 500k ohms in the course of circuit design so as to limit current applied or as necessary.

Claim 15, Levitt discloses a hybrid circuit for buffering (Fig. 2) an audio signal comprising: a substrate having a first (Fig. 2) and second portion (Fig. 1), the second portion severable from the first portion (Fig. 1:124, EEPROM programming socket); and a buffer circuit substantially disposed on the first portion of the substrate, the buffer circuit comprising: a first input for coupling the audio signal (Fig. 2:element 57, microphone); a filter network coupled to the first input (Fig. 2, element 64); an output coupled to the filter network (Fig. 2, col. 5 line 7-11); a tuner for adjusting the filter network (Fig. 2:EEPROM); and a controller for altering a value of the tuner (Fig. 1 host controller), the controller having a second input, the second input disposed on the second portion of the substrate (Fig. 1 element 24, input from computer), whereby a tuning signal coupled to the second input is used to adjust the tuner (col. 4 line 38-43), thereby changing a transfer function of the buffer circuit (col. 4 line 30-33).

Claim 16, Levitt discloses wherein the controller retains a setting upon receiving the tuning signal (col. 4 line 38-43).

Claim 17 Levitt analyzed with respect to claim 15, Levitt discloses, wherein the second portion of the substrate (Fig. 1:124, EEPROM programming socket) and the controller receives the tuning signal (col. 8 line 25-29). Levitt does not clearly disclose wherein the second portion of the substrate is permanently removed after the controller receives the tuning signal. However, it would have been obvious to one ordinarily skilled in the art at the time the invention was made to permanently remove the programming device from the buffer circuit so that the circuit can perform the function it was programmed to without having an additional circuit attached.

Claim 19, Levitt discloses wherein the second input is further coupled to a biasing element, the biasing element maintaining a state after receiving the tuning signal (col. 5 line 34-37).

Claim 20 Levitt discloses, A method for adjusting a buffer circuit for use in a microphone assembly comprising:  
providing a microphone housing and placing selected elements of the buffer circuit in the microphone housing (Fig. 2 col. 3 line 39-41and element 58 PROGR AGC)  
providing a desired response characteristic for the buffer circuit (col. 6 line 65-67);  
measuring an initial response characteristic of the buffer circuit (col. 6 line 68);  
comparing the desired response characteristic to the initial response characteristic (col. 7 line 1-2); determining an adjustment using the comparison, the adjustment for

reducing a difference between the desired and initial response characteristics (col. 7 line 1-2); transmitting a signal to a selector circuit in the buffer circuit (col. 7 line 6-8); and tuning an adjustable filter coupled to the selector circuit (col. 7 line 11-12), the adjustable filter for modifying the initial response characteristic (col. 7 line 65-67).

Levitt does not disclose a microphone housing and placing the buffer circuit in the microphone housing.

However Levitt discloses microphone housing and placing selected elements of the buffer circuit in the microphone housing (Fig. 2 col. 3 line 39-41 and element 58 PROGR AGC).

Therefore it would be obvious to one of ordinary skill in the art at the time the invention was made that the placement of selected elements within housing would be determined by space considerations and design choice.

Claim 22 analyzed with respect to claim 20, Levitt discloses transmitting the signal to the selector circuit (col. 8 line 25-29). Levitt does not clearly disclose removing a portion of the buffer circuit used in transmitting the signal to the selector circuit. However, it would have been obvious to one ordinarily skilled in the art at the time the invention was made to permanently remove the programming device, (which has the portion for transmitting the signal to the selector circuit), from the buffer circuit so that the circuit can perform the function it was programmed to without having an additional circuit attached.

3. Claim 4-8, 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levitt et al (4879749) in view of Killion (5602925)

Claim 4 analyzed with respect to claim 1, Levitt does not disclose wherein the tuning circuit comprises a resistor network.

Killion discloses wherein the circuit comprises a resistor network (Figs. 6). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with the resistor network of Killion in order to have at least one programmable resistor for setting the audio response of the hearing aid as taught by Killion (abstract line 1-3).

Claim 5 analyzed with respect to claim 1, Levitt does not disclose wherein the tuning circuit is a ladder network, the ladder network adjustable by activating a semiconductor device between an element of the ladder network and a ground connection. Killion discloses wherein the circuit is a ladder network (Fig. 6), the ladder network adjustable by activating a semiconductor device between an element of the ladder network and a ground connection (Fig. 6 col. 6 line 7-9). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with the ladder network and semiconductor of Killion in order to save space when implementing the circuit and in order to have a silicon based switch that can be implemented with the rest of the circuit.

Claim 6 analyzed with respect to claim 5 and claim 1, Killion further discloses wherein the ladder network comprises one of resistors and capacitors (Fig 6).

Claim 7 analyzed with respect to claim 6, claim 5, and claim 1, Killion does not clearly disclose wherein a resistor of the ladder network has a value of 5.5k ohms. However, it would have been obvious to one of ordinarily skill in the art at the time the invention was made to set the value of the resistive element to 5.5k ohms in the course of circuit design so as to limit current applied or as necessary.

Claim 8 analyzed with respect to claim 5 and claim 1, Killion further discloses wherein the semiconductor device is a field effect transistor (FET) (Fig.6. col. 6 line 7-9).

Claim 18 analyzed with respect to claim 15, Levitt does not disclose wherein the tuner is a ladder network adjustable by activating a semiconductor device between an element of the ladder network and a ground network. Killion discloses wherein the tuner is a ladder network adjustable by activating a semiconductor device between an element of the ladder network and a ground network (Fig. 6. col. 6 line 7-9). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to implement the tuner of Levitt as a ladder network with a semiconductor in order to have a circuit that can be implemented on a chip.

Claim 23, Levitt discloses tuning the adjustable filter (col. 5 line 3-7) Levitt does not disclose, further comprises activating a semiconductor device between an element of a ladder network and a ground connection. Killion discloses activating a semiconductor device between an element of a ladder network and a ground connection (Fig. 6 col. 6 line 7-9). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with the ladder network and semiconductor of Killion in order to save space when implementing the circuit and in order to have a silicon based switch that can be implemented with the rest of the circuit.

4. Claim 11, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable Levitt et al (4879749) in view of Advani et al. (4926459).

Claim 11 analyzed with respect to claim 1, 9, and 10. Levitt does not disclose wherein the biasing element is a zener-zap diode. Advani discloses wherein the biasing element is a zener-zap diode (Fig. 3; element 106, col.7 line 46-47). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with a zener-zap diode in order to utilize the breakdown characteristic of diodes.

Claim 24 analyzed with respect to claim 20, Levitt discloses tuning the adjustable filter (col. 5 line 3-7). Levitt does not disclose further comprises biasing the selector circuit with a zener-zap diode. Advani discloses further comprises biasing the circuit with a zener-zap diode (Fig. 3; element 106, col.7 line 46-47). Therefore it would be obvious to

one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with a zener-zap diode in order to utilize the breakdown characteristic of diodes.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levitt et al (4879749) in view of Madaffari et al. (2002/0090102)

Claim 21 Levitt discloses a portion of the buffer circuit accessible from outside the housing (Fig. 1:element 24 col. 4 line 29). Levitt does not disclose assembling the buffer circuit in acoustically sealed housing. Madaffari discloses assembling the buffer circuit in acoustically sealed housing (Fig. 2 paragraph 15 line 13-15). Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to modify the circuit of Levitt with the housing of Madaffari in order to protect the circuit from EMI and other interferences.

#### **(10) Response to Argument**

Appellant argues with regards to independent claim 1 that "the action concedes that Levitt does not disclose a buffer circuit in a microphone housing..." (pg. 11) and that Levitt does not teach a microphone housing or a buffer circuit contained in a microphone housing (pg. 13).

The Examiner respectfully disagrees, to clarify examiner's Final Office Action cited by appellants, **not all** the elements of the Levitt buffer circuit are in a microphone housing however **some** of the elements of the Levitt buffer circuit are in a microphone housing.

Levitt discloses microphone housing (Fig. 2 a hearing aid with microphone 57) and all the elements of a microphone buffer circuit (Fig. 1 host controller, Fig 2: filter element 64, amplifier 58). Microphone housing is broadly interpreted as housing for a microphone. Levitt' hearing aid of Fig. 2 clearly houses a microphone, Fig. 2 element 57 and houses an amplifier, Fig. 2 element 58 and col. 4 line 64-68. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention that design choice would determine the housing of all the elements of the buffer circuit in order to provide a desired size hearing aid system.

Appellant argues that Levitt does not teach a microphone buffer circuit (pg. 12) The Examiner respectfully disagrees. Levitt clearly discloses a microphone buffer circuit (Fig 1 host controller, and Fig. 2: filter element 64, amplifier 58 and microphone element 57) as recited in the Examiner Final Office Action. A buffer circuit is any circuit that provides preparatory signal processing for the next stage of processing. Appellant's microphone buffer circuit provides desired frequency adjustments (appellant's specification par 14). Levitt buffer circuit clearly provides gain and frequency adjustments (abstract and Fig. 1-2).

Appellant argues with regards to independent claim 15 that Levitt does not teach a hybrid circuit with a first and second portion (pg. 15). The examiner respectfully disagrees, a hybrid circuit is a circuit comprising of different types of circuitry. Levitt discloses two circuits the hearing aid circuit, Fig. 2 and the host controller circuitry of

Fig. 1 connectable by a programming slot (Fig. 1 and col. 8 lines 25-29). Therefore Levitt clearly teaches a hybrid circuit having a first portion and a second portion.

Appellant argues, with regards to claims, 4-8, 18 and 23, Levitt and Killion do not teach a microphone buffer circuit and a buffer circuit for use in a microphone. The Examiner respectfully disagrees, the arguments with regards to Levitt and the limitation microphone buffer circuit have been addressed above. In addition as appellant concedes Killion discloses a tuning circuit. Killion's clearly discloses a tuning circuit consisting of a resistor network (Fig. 6).

Appellant argues, with regards to claim 11 and 24, Levitt and Advani do not teach a microphone buffer circuit for use in a microphone assembly. The examiner respectfully disagrees arguments with regards to Levitt and the limitation microphone buffer circuit have been addressed above. In addition appellant asserts that it would not make any sense to include the zener-diode to the Levitt device. Examiner respectfully disagrees a zener-diode is a well known biasing element in electronic circuits. Examiner asserts it would make sense to use a zener-diode in a hearing aid circuit.

Appellant argues with regards to claim 21, Levitt and Madaffari do not teach a microphone buffer circuit. The examiner respectfully disagrees arguments with regards to Levitt and the limitation microphone buffer circuit have been addressed above. In addition applicant asserts the Levitt/Madaffari combination is unsustainable. Sealed

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housing for assembling electronics are well known in the art at the time of the invention it would have been obvious to one of ordinary skill in the art at the time of the invention to assemble a buffer circuit in a specially sealed housing in order to protect delicate circuitry from various external harmful effects.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Fatimat O Olaniran/

Examiner, Art Unit 2614

Conferees:

/Vivian Chin/

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/CURTIS KUNTZ/

Supervisory Patent Examiner, Art Unit 2614